REMARKS

The foregoing Amendment corrects translational errors and conforms the claims to United States practice. No new matter is added.

Respectfully submitted,

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Date: December 14, 2001
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PATENT
Attorney Docket No. 401484/BRAUN

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

KNORZER et al.

Application No. Unknown

Filed: December 14, 2001

For: ELECTRIC AXIAL FLOW MACHINE

Art Unit: Unknown

Examiner: Unknown

AMENDMENTS TO SPECIFICATION, CLAIMS AND ABSTRACT MADE VIA PRELIMINARY AMENDMENT

Before the paragraph beginning at page 1, line 3, insert as a heading:

Field of the Invention

Amendments to the paragraph beginning at page 1, line 2:

The present invention relates to an electric axial flow machine~~ as defined in the precharacterizing clause of the independent patent claim 1~~.

Before the paragraph beginning at page 1, line 6, insert as a heading:

Background

Before the paragraph beginning at page 2, line 21, insert as a heading:

Summary of the Invention

Amendments to the paragraph beginning at page 2, line 21:

In view of the disadvantages of the previously known axial flow motors and generators, the invention is based on the following object. The aim is to provide an electric axial flow machine~~ of the type mentioned at the beginning~~, the rotor of which is as low in mass and inertia as possible, but nevertheless stable and also suitable for high rotational speeds.

Delete the paragraph beginning at page 2, line 30.

Amendments to the paragraph beginning at page 2, line 37:

~~The essence~~An important feature of the invention is that, in an electric axial flow machine with an ironless disk-shaped rotor which is arranged on a machine shaft and has permanent magnets which are embedded in a fiber- or fabric-reinforced plastic, the permanent magnets are each joined with a positive fit to the surrounding fiber- or fabric-reinforced plastic and the latter, together with the permanent magnets and the machine shaft, forms a dimensionally stable unit. Arranged next to the rotor on both sides there is in each case a stator.

Before the paragraph beginning at page 3, line 36 insert as a heading:

Brief Description of the Drawing Figures

Amendments to the paragraph beginning at page 4, line 5:

figure 2 shows the axial flow machine in a partial sectional view along the line ~~E-E~~ II-II in figure 1;

Amendments to the paragraph beginning at page 4, line 13:

figure 4 shows the rotor including the machine shaft in a partial sectional view along the line ~~A-A~~ IV-IV in figure 3;

Amendments to the paragraph beginning at page 4, line 23:

figure 7 shows a sectional view of the segmented permanent magnet along the line ~~C-C~~ VII-VII in figure 6;

Amendments to the paragraph beginning at page 4, line 36:

figure 11 shows a sectional view of the stator along the line ~~D-D~~ XI-XI in figure 10.

Before the heading at page 5, line 1 insert as a heading:

Detailed Description

Amendments to existing claims:

1. (Amended) An electric axial flow machine ~~with~~ including an ironless disk-shaped rotor ~~(1) which is~~ arranged on a machine shaft ~~(2)~~ and ~~has~~ having permanent magnets ~~(11) which are~~ embedded in a fiber- or fabric-reinforced plastic ~~(12)~~, and, on both sides, next to the rotor ~~(1) in each case,~~ a stator ~~(3, 4), characterized in that~~ wherein the permanent magnets ~~(11)~~ are each joined ~~with a positive fit~~ to the surrounding fiber- or fabric-reinforced plastic ~~(12) and the latter, together with~~ so that the permanent magnets ~~(11)~~ and the machine shaft ~~(2), forms~~ form a dimensionally stable unit.

2. (Amended) The electric axial flow machine as claimed in claim 1, ~~characterized in that a plurality of~~ wherein the permanent magnets ~~(11)~~ are arranged in a ~~circular manner~~ circle around the machine shaft ~~(2)~~ and the fiber- or fabric-reinforced plastic ~~(12), in particular a thermosetting material,~~ extends between the permanent magnets ~~(11) altogether~~ over at least 10%, ~~preferably between 15% and 20%,~~ of the circle.

3. (Amended) The electric axial flow machine as claimed in claim 1 ~~or 2~~, wherein ~~characterized in that~~ the rotor ~~(1)~~ has on ~~the~~ an outer circumference or ~~in the vicinity of~~ proximate the outer circumference a stiffening band ~~(13), which comprises~~ comprising preimpregnated fibrous material, ~~which preferably contains glass, carbon or Kevlar fibers, and, for stiffening purposes,~~ the rotor ~~(1) is preferably formed such that it becomes~~ becoming thicker ~~from the inside outward~~ with increasing distance from the machine shaft.

4. (Amended) The electric axial flow machine as claimed in ~~one of claims~~ claim 1 ~~to 3, characterized in that it has~~ comprising means for determining ~~the~~ magnetic pole position of the rotor ~~(1), which preferably comprise~~ including a magnetic strip ~~(14) which is~~ arranged on ~~the~~ an outer circumference of the rotor ~~(1)~~ and ~~forms~~ having a radially magnetized series of magnetic poles ~~, which are respectively~~ arranged in ~~a way corresponding~~ correspondence to the permanent magnets ~~(11)~~ embedded in the fiber- or fabric-reinforced plastic ~~(12)~~, and fixed-in-place Hall probes ~~(5)~~ interacting with ~~said~~ the magnetic poles.

5. (Amended) The electric axial flow machine as claimed in ~~one of claims~~ claim 1 ~~to 4, characterized in that~~ wherein the fiber- or fabric-reinforced plastic ~~(12)~~ comprises an epoxy resin or an imide resin with glass fiber reinforcement ~~and preferably, for better thermal expansion and thermal conductivity, additionally comprises mineral substances~~.

6. (Amended) The electric axial flow machine as claimed in ~~one of claims~~ claim 1 ~~to 5, characterized in that~~ wherein the permanent magnets ~~(11)~~ respectively comprise at least two separate magnet segments ~~(111)~~ next to one another, in ~~the~~ a circumferential direction, ~~which are preferably~~ joined by ~~means of~~ a metal adhesive.

7. (Amended) The electric axial flow machine as claimed in ~~one of claims~~ claim 1 ~~to 6, characterized in that~~ wherein the ~~stators (3, 4) each comprise~~ stator comprises an annular yoke ~~(31, 41), in which~~ including slots ~~(32, 42)~~ extending approximately radially ~~from the inside outward have been made,~~ and through which ~~slots~~ multi-phase windings ~~(33, 43) are led~~ pass.

8. (Amended) The electric axial flow machine as claimed in ~~one of claims 1 to~~ claim 7, ~~characterized in that~~ wherein one of the permanent magnets ~~(11) or~~ and the slots ~~(32, 42)~~ are transposed in ~~the~~ a circumferential direction.

9. (Amended) The electric axial flow machine as claimed in ~~one of claims~~ claim 1 ~~to 8, characterized in that the~~ including two stators ~~(3, 4) are~~ electrically offset in relation to one another in ~~the~~ a circumferential direction by 180°~~, with the result that the corresponding~~ so that magnetic fluxes in the circumferential direction in the rotor ~~(1)~~ are oppositely oriented and ~~consequently~~ essentially cancel one another ~~out in practice, at least for the most part~~.

10. (Amended) A method for producing a rotor ~~(1)~~ for an electric axial flow machine as claimed in ~~one of claims~~ claim 1 ~~to 9, characterized in that a~~ wherein the machine shaft ~~(2)~~ and the permanent magnets ~~(11)~~ are arranged in a mold and a pre-heated fiber- or fabric-reinforced plastic is subsequently poured under pressure into the mold, which is heated.

11. (Amended) The method as claimed in claim 10, ~~characterized in that the~~ including pouring ~~in of~~ the fiber- or fabric-reinforced plastic ~~takes place~~ at a temperature of at least 200°C and under a pressure of 500 - 1500 bar.

Insert the following abstract:

Abstract Of The Disclosure

An electric axial flow machine includes an ironless disk-shaped rotor arranged on a machine shaft and having permanent magnets embedded in a fiber- or fabric-reinforced plastic, and, on both sides, next to the rotor, a stator, wherein the permanent magnets are each joined to the surrounding fiber- or fabric-reinforced plastic so that the permanent magnets and the machine shaft form a dimensionally stable unit.